

# Companies to Watch

## C3 International LLC

[private]

www.cccintl.com

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Alpharetta, Georgia

**Chief Executive:** Mark Deininger

**What it does:** Provides custom chemical surface-treatments that greatly extend the life and performance of metals, glass, carbides and ceramics used for many industrial applications.

Thin-film coatings are commonly applied to industrial components to improve their performance and extend lifetime. But conventional coatings rarely penetrate into the substrate surface, which leads them to flake and quickly wear down.

A new nano-scale surface treatment developed by C3 International LLC, however, is promising to enhance the performance and lifetime of coated components. The technology platform consists of 58 elements, in various combinations that the company formulates to impart a myriad of new properties to the substrates of steel, metal alloys, carbides, glass, ceramic, cermets and most other inorganic materials.

The technology is available to C3 customers as a process, wherein rare earth and other metal oxide films are applied to the substrate at low temperature (450° C) to form a 50- to 500-nm thick film surface anchored at the molecular level into the substrate.


From an end-use perspective, the nano-scale structure of C3's infusion-coating technology makes it extremely flexible, efficient, unobtrusive, smooth, resilient and tough in high temperature, caustic environments. Plus, the film is better able to expand and contract with substrates without cracking, peeling or popping off.

With regards to processing, C3's technology is both inexpensive and eschews toxic processing agents, unlike many conventional coating processes such as vapor deposition or ion impregnation. Plus, it can be applied evenly to parts with complex shapes or internally to porous materials without clogging the pores.

C3's partnership with Oak Ridge National Laboratory (ORNL) has been a critical component to its R&D program. The collaboration has given C3 the early credibility it needed to commercialize its coatings. That partnership appears ready to continue into C3's commercial phase. The company was invited to be the anchor tenant at Oak Ridge National Lab's new Industrial R&D Complex, which is scheduled to open next year.

Founded in 2000 with private equity funds, C3 had directed most of its early efforts towards R&D and the protection and development of its IP. With the recent publication of several patents, however, C3 is changing tack and simultaneously accelerating the pace of its patent protection and technology commercialization.

The company has already begun generating revenues from inroads it has made into the petrochemical industry, as well as the aluminum die cast and extrusion industry. That commercial momentum is expected to increase by the end of this year, as the company sees new revenues from the hot rolled steel industry and from solid oxide fuel cell applications.

A portion of its funding has come from management and angel investors, but the company has also landed a total of \$150,000 in grants from the U.S. Department of Energy. 

## KiloLambda, Inc.

[private]

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**Chief Executive:** Doron Nevo

**What it does:** Leverages the unique optical properties that materials have at the nanoscale to create improved materials, structures, devices, and systems for optical communications applications.

As the complexity and reach of optical networks continues to grow, optical power levels throughout the system become harder to predict and control. Currently, very few fiber communication networks implement any power control, exposing fibers and components to potential damage in the event of a surge of optical intensity.

Most, if not all network power control or regulation is currently provided by software or electronic control loops. KiloLambda is developing simpler, more cost effective solutions based on nanomaterials and structures that only transmit light according to predetermined levels of input power.

The technology relies on the light scattering properties of nanoscale particles or structures incorporated into the optical material. At low powers, the scattering is minimal. That changes if the intensity of light increases beyond a certain threshold. Then, the nanoparticles permit only a fraction of the power to propagate. In effect, the technology can either act as a fuse or a control mechanism.

The company's selection of optical power control components is already generating revenue. But, the company recently signed a joint venture with Lisle, IL-base **Molex** [MOLX] to develop a new family of components that combines its novel optical fuse and power limiter technology into an easily installed connector assembly. The partnership will also enable mass scale automatic assembly of KiloLambda's technology.

The pair recently launched the first product, a dynamic attenuator, in what will eventually be a selection of five jointly developed product families. The components are currently being sampled by prospective customers, and initial sales are expected to begin by the fourth quarter of this year.

Founded in 2001, KiloLambda has landed funding totaling \$5.8 million in two rounds so far. Its current roster of investors includes Yozma Group and Sky Point Capital.

The company intends to leverage its underlying technology into other applications, such as filtering sunlight for cameras, windows and eyeglasses. With that goal in mind, it plans to launch a two-phased R&D project, where each phase should require two years and \$5 million apiece.

Although KiloLambda projects that its current sales activities will generate positive cash flows starting in 2008, the timing and volume of these revenues are uncertain. So, implementing its two-phase program will require additional funding to bridge the potential gap between revenues and R&D expenses.

So the company has just started another fundraising round in which it hopes to attract \$10 million to help it expand its sales force and marketing initiatives, support growth and working capital, expand its product portfolio and accelerate research and development. 